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The Money Value of Rural Improvements.

ONE of the strongest considerations in favor of preserving the forests in mountain regions like those of New Hampshire is that they offer irresistible inducement to people in the city who are looking for summer resorts. Many people have come to consider a summer residence among the hills as essential to their comfort as a winter home in the city; and the growing practice among those who cannot afford to support more than one establishment of spending some weeks or months away from the confinement of city life makes it a matter of importance that provision should be made for those who find health and pleasure in the woods and amid the scenery of wild nature.

It would be hard to estimate the direct pecuniary advantage which a state like New Hampshire derives from this tide of summer travel which flows toward her mountains all summer long. Every one of these visitors, in some way or other, helps the entire community upon which he depends for a certain time each year for his pleasure and subsistence; and it would not be difficult to prove that the actual and prospective revenue derived from this source is so important that the value of the material products of the forests of the state, even under the wisest management, would be insignificant by comparison.

But it should not be forgotten that there are thousands of people from the cities who, instead of resorting to mountain and forest regions, or to the shores of the ocean, prefer to spend their summers in quiet country villages and farm-houses. Of course it is quite as much to the interest of rural communities to make their neighborhood attractive as it is for the owners of sea-coast and mountain-land. It is true that this should not be considered as the chief reason for efforts to improve the appearance and add to the convenience and comfort of country towns. Societies for rural improvement accomplish a good work when they brighten in any way what is often the dull side of country life. Every attempt to beautify the surroundings of country homes and make them attractive brings its own reward in the happier life of those who inhabit these homes. But apart from this there is a tangible business advantage to be gained by country villages when they are made specially attractive to city visitors; and this profit accrues not to the villages alone, but to all the surrounding region, when the farm-houses are open to paying occupation, and a market is provided for the products of the farm. It happens in this way that to the population of a large district it is a matter of actual profit to have the neighboring villages and towns made attractive.

The first work in this direction is to improve the roads so that there is some pleasure or at least some comfort in traveling abroad. A visitor who reaches a village over a muddy and rough highway receives no good impression of it, and as the road is also the last thing as well as the first thing which attracts his attention, bad roads are among the most repellant and disagreeable features which any community can present. But where the roads are smooth and hard, with little dust and mud, and where good foot-paths abound, a strong inducement is presented to those who love to pass much time in the open air. Of course this is but one feature of the reform in any community. Shady walks, roadsides clean and bordered with shrubs where this is practicable, farm-yards free from unsightly objects, gardens neatly planted and kept—all these things not only delight the eye as manifestations of beauty and order always do, but they suggest a cleanliness and propriety in all the details of life and a proper regard for health and comfort; they give assurance of good drainage and pure air and all other conditions which make a sojourn in the country desirable and beneficial.

Now, inasmuch as all the inhabitants of a given district are interested in matters of this sort, combined action is naturally suggested. The influence of personal example is undoubtedly great, and many a man, by the proper ordering of his own grounds, has set a pattern which has been followed by his neighbors until an entire community has been regenerated. But after all, these matters can be much more efficiently carried on if it is done in an organized way. Many a town in New England and in the middle states has become prosperous because wealthy men from distant cities have bought lands near by, which have been transformed into beautiful parks, stocked with well-bred cattle and horses. All this was brought about because in the beginning there was unity of purpose in the community to make the town attractive, and transient guests were induced to become permanent residents. Examples like this should be an encouragement to all country neighborhoods and especially to such as have some natural advantages. There will be no abandoned farms in a region where there is associated effort for rural improvement. Such effort cannot fail, in any event, to add to the comforts and pleasures of rural life, and it is more than probable that it will insure a more substantial return in actual revenue than any other equal outlay in whatever direction it is invested.

In every state where there is not already a law to that effect, the friends of the forests should, as soon as possible, secure the passage of an Act restricting the time and method of burning brush. Brush fires are the principal cause of damage to the forests in the eastern and thickly settled parts of the country, and it is hopeless to try to check forest fires unless this evil can be restricted. The notion that a man has a right to do as he pleases on his own land would be well enough, perhaps, if one man owned all the land in the country and were its sole inhabitant. Then his doing as he pleased could injure only his own property. When there are but a few people in a great forest region they are naturally apt to acquire the habit of indifference to the consequences of their actions, because there is often no one to be injured by them or to call them to account. As population increases the habits of careless freedom which were formed in earlier times are still followed, but under the changed conditions they work great and increasing injury.

A man has no right to liberate a destructive force on his

own premises, when it is certain to pass beyond his control, and destroy the property of his neighbors. And yet brush fires are usually set in times of drought, and very often under circumstances which render extensive injury almost certain. Dwellings and other farm buildings, with crops and stock, are often consumed by a fire which was started to burn a little rubbish; and although the burning of a house attracts more attention, it causes far less loss than that which results from the destruction of extensive tracts of forest or woodland. It is impossible for men to live together in civilized society unless they recognize the necessity of submitting to a little control in the interest of the whole community. Necessary restraints and orderly methods are a benefit to all, and as an increasing number comes to be affected by the action of each individual, the sense of personal responsibility should be developed so as to correspond with the more complex conditions of life. The present inconsiderate and lawless method of setting brush fires is a constant menace to the whole community wherever it is practiced. Values to the extent of many millions of dollars are destroyed every year in this country by the fires thus started. Freedom is but one side of life in civilized lands. Order and law are quite as necessary, and they subserve the interests of all. We need in this country a clearer recognition of responsibility for actions which are injurious to others Want of intention to injure should not excuse carelessness and indifference. Every state should have on its statute books a brief and plain enactment providing for a practical and effective supervision of the matter of firing brush, prescribing the time and conditions for work of this kind, the method by which the law is to be enforced, and the penalties for its violation. Such a law is a matter of great convenience, as well as of economy, in every orderly community, because it enables the citizens to co-operate with each other for their own protection and for the safety of all; and legislation for this object is especially necessary in those states which include considerable areas of forest.

The Decorative Use of Flowers.

IN the decorative use of flowers the two qualities of color and form (or mass) are both to be considered. The first appeals much more strongly to the ordinary sense of beauty and the domestic side of life; but the elegance of certain plant-forms is fully recognized and is instinctively used in the decoration of large interiors, especially of those which have at least a semi-public character. The statuesque growth of the Palm and the delicate arches formed by the spring of tropical Ferns are essentially in harmony with architectural surroundings, and it is a genuine artistic instinct that has, in a manner, dedicated them to the decoration of churches and large halls. Indeed, it is an instinctive sense of fitness which has prescribed the unwritten law that form shall be chiefly depended upon in the decoration of interiors of architectural dignity, and color in the decoration of the home.

Beautiful combinations of color are more generally felt and accomplished than beautiful combinations of form, because the appreciation of form depends upon a much more cultivated intelligence. It is thoroughly understood in Japan. Any thoughtful observer of Japanese art has noticed—especially in the relief decoration of bronzes—that flowers and plants are used absolutely as models, not as mere themes, for decorative designs. Each flower is used singly, at its best and most perfect development of form; and the jar or vase which holds it is selected to carry out the beauty of its lines. This beauty of line which is so effective when applied to ornament is even more effective in nature and can be made to tell with great success in its relation to the decorative grouping of flowers even in the home. Decorative grouping may include the best possible effects of both form and color, and it is for this combination that the true lover of beauty will strive. Anyone with a good memory for color effects, enriched by many a lovely result of accidental grouping—and possessing also that instinct to select among such lessons which we call taste—is well equipped for using flowers for decoration. These memories of successes in time become principles, so that one comes to use contrasts and combinations in flower tints as unerringly and unhesitatingly as a true artist blends or opposes colors upon his canvas.

In the decoration of a room, as a rule, all masses of delicate color should be arranged or placed in strong lights. If for a daylight effect, they should be placed nearest the windows, where no dense shadow will blot out both form and tint. White flowers are best when placed in immediate contrast with a color which reflects, as in this way the white really gets the value of gradation of tint.

Each flower should be able to detach itself from the mass, so as to give shape as well as color. This applies principally to flat masses or banks of flowers which may be most artistically arranged as to color and yet lose immensely in effect if the flower-heads are not allowed to spring, as they would in nature, against some background of foliage or atmosphere.

In all masses or groups of flowers, the best effects of color are made by shading and gradation, using the same variety of flower in different colorings, white warming into rose and rose into carmine, or pale lemon-color deepening into yellow, yellow into orange and orange into sienna or Damascus red, Blues on blues, lilac-purples on blue-purples: these are harmonies with which every flower-lover is familiar, but their effect can be wonderfully intensified by contrasting them with each other, or by different considerations of background and surrounding. A careful leading up of color in the jar or vase which holds the group is of great importance; choosing one which has the same general tone as the flowers but darker, and repeating the color again, but in a lighter tone, in some drapery or other object in the background. To illustrate this, suppose a jar of blood-red Tulips splashed and spotted with red, placed in some shadowy corner of a room, where a brilliant effect is needed. They should stand on a level with the eye, upon a shelf or piece of furniture which is itself dark in color. The jar or vase—which should be rather large in proportion to the mass of flowers—may be of wine-red or liver-colored lustre, or of the red De Morgan lustre showing orange flakes of light from its reflections of the Tulips. The mere added bulk of color is a gain from the decorative point of view, while the repetition of it in a reflecting surface is still another point gained, this glitter giving value to the flesh-like quality of the flowers. if something in drapery, in tones of reddish-ochre or pure yellow, can be drawn in folds behind both jar and flowers, and can fall in long lines below them, the largeness and breadth of effect is still further increased. One can see at a glance how much greater the decorative effect produced by this treatment would be than could possibly be obtained by all these things separately used.

Jars of metal—brass, copper and silver—are universally appropriate to the decorative placing of flowers, and this because of their reflecting quality, which repeats any color massed above them. But the inherent color in metal is more valuable for its contrasts than for its repetitions. Blue flowers in a bowl of burnished brass, with brown-gold draperies behind and beneath them, are a joy forever; and any one who has ever arranged a group of pink Orchids in a classic silver vase, reflecting all their elegance of form and changing beauty of color from the mirror-like breadth of a salver placed below them, will not soon forget the lustrous pearl-like quality of their beauty. Such an arrangement finds its proper environment in a white drawing-room or upon the satiny linen of a dinner-table.

As an illustration of the value of appropriate color and place in the surroundings of flowers, imagine how unlovely this classic vase, with its pink and pearly Orchids, might be if placed against a deep, India-blue curtain, in some dark library or sitting-room. All its delicacy and elegance would be worse than lost—they would count against it as a decorative effect. In such a room one should draw the heavy curtains partly away from the window, and, half against the curtain and half against the light, place a great round brass jar crowded full of bright blue Larkspur, or single Hyacinth, or Canterbury Bell, or any other strong, pure-blue flower. Or one might stand a tall, cloudy-blue porcelain vase against the light, in the middle of the window, fill it with stalks of blue Fleur-de-lis and spiky blue-green leaves, and get an effect like a panel of stained glass.

Solid color is always an advantage in a flower-holder, and few things are more effective than the clay colors—the reds and browns and ochres, and, more than all, the greens one sometimes finds in Spanish and Indian water-jars. All flowers are beautiful in green jars, and it is a pity that they are not more easily procurable, or that they are not attempted in some of our potteries. In fact, large, well shaped and well colored jars, of coarse and cheap clay, are greatly needed in the decorative market. Rich brown, two-handled cooking jars come as near the sort of thing needed as can easily be procured,

and any one who has arranged in them long running branches of yellow and maroon Nasturtiums, or the yellow glory of the Black-eyed Susan, will understand their value.

Endless examples of beautiful arrangements of flowers might be given, and endless rules for such arrangements, but it must be remembered that, to make a house or a room beautiful with flowers, every peculiarity of furnishing, color and light must be taken into account, and that any arrangement, beautiful in itself, may lose all its value from an inharmonious setting.

New York. *Candace Wheeler.*

The Nettle Tree.

THE Nettle-tree (*Celtis occidentalis*), known also as the Sugarberry, Hackberry and False Elm, is one of the widely distributed trees of the American forest; indeed, with the exception of the Red Cedar and of the Box Elder, there is no other American tree which grows over such a wide territory or flourishes under such varied climatic conditions. It is very common in some parts of the country, and in others is so rare that to most people its name conveys no idea whatever. In New England, where it is found only in localities remote one from another and never anywhere in large numbers, very few persons know of or can recognize this tree. It is more common on the banks of the Hudson, where it grows quite commonly along the roadsides and by fences, and is sometimes a feature in the landscape; farther west it grows to a larger size and is much more common, and in the forests of the lower Ohio Valley it is one of the largest and most common trees, and is as familiar to the people of that part of the country as it is strange to the inhabitants of New England.

The Nettle-tree belongs to the same family as the Elms. It differs from the Elms, however, in its fruit, which, instead of the membranaceous dry samaras of those trees, is a globular drupe with a thin pulp surrounding a stony seed. The flowers are very much like those of the Elm, except that the male and female organs are generally produced separately, and that the females have one instead of the two ovules of the Elm and that instead of appearing before the unfolding of the leaves they open with them. The flowers, crowned with their two long recurved stigmas, are green and quite inconspicuous, and generally escape the notice of persons who are not looking specially for them. The fruit,* which hangs late into the winter from long slender stems, is as large as a pea and deep orange colored when fully ripe. The dry flesh between the thick outer skin and the stone or seed has an insipid but rather agreeable flavor, and is devoured by many birds.

The Nettle-tree, as might be expected of a plant subject to such varied conditions of soil and climate, varies greatly in different parts of the country, and botanists have at different times believed that it represented several different and distinct species. The reproductive organs, however, are identical in all the various forms the tree assumes, and the differences are differences in habit, and in the leaves, which vary greatly in size, shape and texture. These different forms, however, seen together in large numbers, all pass from one into another, so that it is impossible to find any fixed character of leaf by which it is possible always to distinguish the different forms which have been considered different species. The bark of the trunk in all the forms presents the same general appearance; it is ashy gray, and covered in the case of old individuals with thick discontinuous corky ridges, sometimes an inch deep and half an inch thick.

The Nettle-tree, as it grows in New England, is a low, round-headed tree, fairly well represented in the illustration on page 43, which is the portrait of a tree growing close to the shore on Squantum, a point of land running out from the city of Quincy into Massachusetts Bay. This particular specimen has always grown with sufficient room for the development of its lateral branches. This, and the fact that it has been exposed to the sweep of the wind, has changed its habit somewhat and shortened and thickened its branches. On the banks of the Hudson the Nettle-tree is an entirely different looking object, with a short, slender trunk, and long, graceful, pendulous branches; west of the Alleghany Mountains, which is the true home of the species, it reaches occasionally, according to Mr. Robert Ridgway, whose paper on the native trees of southern Indiana and Illinois (published in the *Proceedings of the National Museum* for 1882), is one of the most interesting and instructive contributions to American dendrology ever written, a height of 120 to 130 feet, with a tall, slender trunk, 80 feet sometimes to the first branches, and

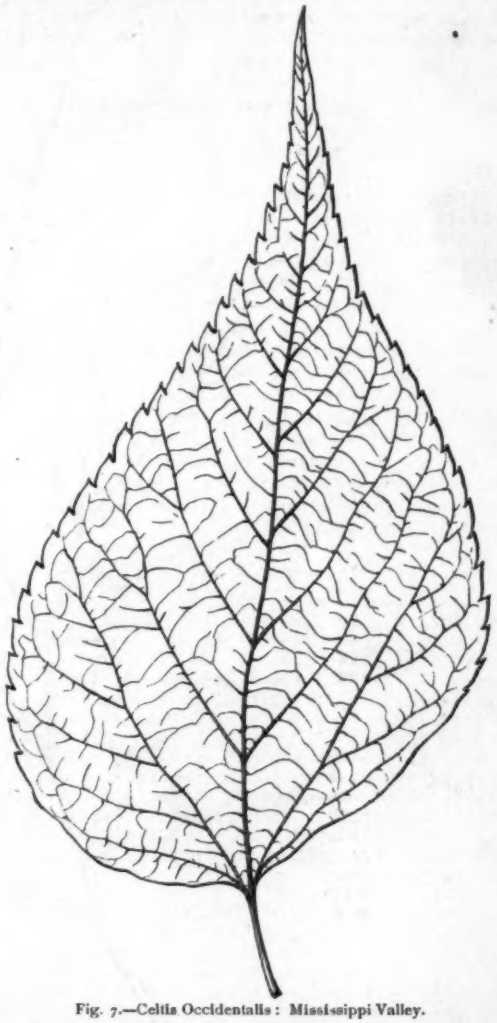

Fig. 7.—Celtis Occidentalis: Mississippi Valley.

often comprising three-quarters of the total height of the tree. A little farther west, on the dry Ozark hills of Missouri, it is reduced to a low shrub three or four feet high only, but always with the same flowers and fruit; in the valley of the lower Rio Grande in Texas, and in the mountain valleys of the Sierra Madre in the adjacent parts of Mexico, the Nettle-tree has a short, stout trunk, with a wide head composed of long and exceedingly pendulous branches, the whole forming a tree which no one looking at it from a distance could believe was the species of the Massachusetts coast or of the Indiana forests. Farther west again, in the arid region of western Texas, in Arizona, and in Sonora, it generally has short, stout, upright branches and a totally different habit.

* 1.—The fruit may be seen, with the aid of a magnifying glass, hanging on the branches of the tree in the illustration on page 43.

The leaves of the Nettle-tree vary more than its habit of growth under the influence of its climatic environment, although certain characters, especially the arrangement of the veins and the nature of the pubescence which clothes them always in their young state, are common to them all. The trees produced on the fertile soil of the Mississippi Valley have large, membranaceous leaves with deep sharp serratures (Fig. 7, p. 39) quite smooth on the upper surface and only slightly rugose on the lower. This is the form which has been called both *Celtis Mississippiensis* and *C. crassifolia*. On the New England trees the leaves are smaller, and generally narrower, thinner, less coarsely serrate, glabrous or only slightly rugose on the upper surface (Fig. 8). The form with narrowly acuminate, smooth, rather coriaceous leaves with entire margins, very common in the southern States, has been described as *C. integrifolia* (Fig. 9). This form passes, however, into forms with leaves more or less serrate. The leaves of the dwarf form (the *C. pumila* of botanists, Fig. 10) are generally not more than two inches long when fully grown and are often much smaller; they are generally entire, although sometimes deeply and sharply serrate. The leaves of the Rio Grande form (*C. Berlandieri*, Fig. 11) are acute, with a long, slender point often somewhat falcate and quite glabrous on the two surfaces. The most distinct of all the varieties is that of the arid south-west, the *C. reticulata* of Torrey (Fig. 12). The leaves of this variety are thick, coriaceous, entire, conspicuously venulose, rough on the upper surface, and

Fig. 8.—Celtis occidentalis: Massachusetts.—See page 39. 1. Fruiting branch. 2. Flowering branch.

Fig. 9.—Celtis occidentalis: Entire-leaved form.

Fig. 11.—Celtis occidentalis: Lower Rio Grande Valley.

Fig. 10.—Celtis occidentalis: Dwarf form.

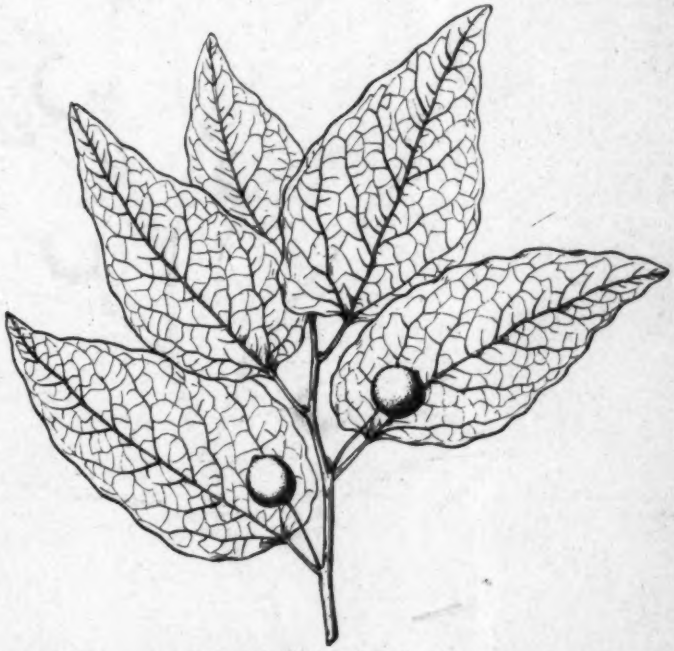

Fig. 12.—Celtis occidentalis: Arizona.

rugose on the lower. This plant taken by itself might well be mistaken for a distinct and well marked species, but it is connected with the entire leaved form of the Mississippi Valley by innumerable intermediate forms which vary in the thickness of their leaves in proportion as the region in which they grow is unequally and insufficiently supplied with moisture.

The range of the American Nettle-tree is from the valley of the St. Lawrence to eastern Oregon, and to Florida, northern Mexico and south-eastern California.

The wood of the Nettle-tree possesses a good deal of value, and it is destined, as better known woods become scarce or are exterminated, to be used more in the future than it has been in the past. It is strong, not very hard, and easily worked. The color is a pleasing light yellow, but its appearance is injured by the large number of open ducts which mark the layers of annual growth. It has always been used for fuel, as the tree is easily cut and the wood splits well; and of late years it is coming into use in some parts of the west for the manufacture of cheap furniture.

The ornamental value of the Nettle-tree is great; the

habit is good and often exceedingly graceful; the foliage has a bright cheerful green color, and the leaves remain fresh and green on the branches long after those of nearly all our other native trees have fallen. They drop finally without any marked change of color. This tree grows very rapidly; it is free from serious attacks of insects, and it is admirably suited to plant as a street or roadside tree. It will thrive in all sorts of soil and in all exposures, still there are few American trees which have been so seldom planted, or whose beauty or value are so little known or appreciated.

The illustration on page 43 is from a photograph for which we are indebted to Dr. William Herbert Rollins, of Boston. The illustration serves to emphasize what has been said more than once in these columns, that trees in winter possess peculiar beauty, and that to know them well and to appreciate them they must be seen at this season of the year as well as in the summer. *C. S. S.*

Foreign Correspondence.

London Letter

THE WEATHER PLANT.—About a year ago we were informed by the London papers that Mr. Nowack, of Vienna, had discovered a wonderful property in the leaves of the plant whose seeds are commonly known as "Crab's-eyes," and which is known by the name of *Abrus precatorius*. Like a great many plants belonging to *Leguminosæ*, the leaves of the Abrus perform many extraordinary movements under the influence of light, etc. Whatever the cause may be, no one can doubt that the movements of the leaves of this plant, of the Sensitive Plant (Mimosa), of the Telegraph Plant (Desmodium), of many Acacias, Bauhinias, and other Legumes, have not yet been properly accounted for. Charles Darwin made many experiments and observations on these very movements, and finally concluded that "leaves which sleep continue to move during the whole twenty-four hours." He also demonstrated that there is a continual motion going on, although not generally perceptible, in all plants at all times. The Abrus is not the most striking amongst plants whose movements are exceptionally palpable; but Mr. Nowack, after long observation, concluded that in them we possess a "weather indicator" much more trustworthy than any meteorological instrument whatever. He declares that "its sensitiveness to atmospheric and electric influences may be turned to practical account for forecasting the local weather, with truly marvelous precision, forty-eight hours beforehand, and likewise earthquakes or subterraneous disturbances, both at a distance and locally, with respectively three to eight days previous notice." An apparatus in which the plants were to be grown was patented by Mr. Nowack, and this, along with his plants, he brought to Kew in July last, with a letter of introduction from H. R. H. the Prince of Wales.

The Directors of Kew naturally afforded every facility to Mr. Nowack in his demonstrations, and Dr. Oliver, one of the best of the younger school of physiological botanists, undertook to watch and check Mr. Nowack's work. The result is about to be published in the *Kew Bulletin*. That the plant is of absolutely no value as a weather indicator is proved by the statistics given in Dr. Oliver's report. Mr. Nowack's prognostications were scarcely ever nearly right, and whatever the cause of the movements it is proved that they are not produced by the weather of the day after to-morrow. Mr. Nowack may plead that weather in England is made up of samples, and no plant, nor yet instrument, however nicely arranged, could foretell weather here. The movements of the leaves of the Abrus are influenced by changes in the intensity of light, changes in atmospheric humidity, and changes in temperature. So also are the movements of many other Leguminous plants; but why their leaves should move so conspicuously whilst those of other plants under the same conditions show no perceptible movement remains an unsolved problem.

The idea that some plants in their movements foretell the weather is not new. At the end of last century, Ruiz and Pavon describe the movements of *Porlieria hygrometrica*, a Chilian Zygophyllaceous plant, not unlike a Mimosa. These movements, they say, foretell the weather by closing their leaves in the evening half an hour before sunset if the morrow is to be dry, and an hour before sunset if it is to be overcast and tempestuous. This plant is in cultivation at Kew, and Dr. Oliver has found nothing in its movements to support the above theory.

A GARDENER'S PROBLEM.—Under this title the Director of Kew has communicated to *Gardeners' Chronicle*, a paper on horticulture, which he declares is "essentially an empirical art." This statement the editor of that journal finds fault with on the ground that it is too absolute, and "very discouraging to those who believe that practical horticulture has a right to look to vegetable physiology and anatomy for guidance and profitable suggestion, and, moreover, that it will not look in vain." I need not attempt to reproduce Mr. Dyer's arguments here; but I may say that, however discouraging it may appear, there is no getting away from the fact that horticulture, pure and simple, high-class horticulture, too, obtains practically very little help from the professors of physiology or any other department of botany. An exception might be allowed in favor of those who supply names for garden plants, but the name of a plant is of no assistance in its cultivation, and there are dozens of first class cultivators whose knowledge of nomenclature would be called wofully deficient by the systematic botanist. On the other hand, there are many good gardeners who know a good deal of botany; but they are no better cultivators on that account. I use the term gardener only in the sense of a cultivator of plants. The gardener as an educated man is another question. It would not be difficult to name a dozen men, past and present, who stood, or stand, head and shoulders above their compeers in a knowledge of gardening art, but who never looked for any assistance from the physiologist, and probably never wanted it. The fact is, as Mr. Dyer states, good gardening is the outcome of experiment, and he is the most successful cultivator who is the most thoroughly acquainted with the best methods—*i. e.*, the best results arrived at by experiment on the part of gardeners generally. Take as an example any plant newly introduced, whose cultural requirements are unknown. *Nepenthes Rajah* was introduced by Messrs. Veitch about six years ago. They knew where it came from, and no doubt were well acquainted with the conditions under which it grew when wild.* The plants of *N. Rajah* were distributed, and many were lost through wrong treatment, even by those who grow Nepenthes well. It looked as if this grand Pitcher Plant would prove incapable of cultivation, when lo, the information came from Glasnevin, the garden of many important horticultural achievements, that the cool conditions afforded by the Masdevallia, house suited exactly this Nepenthes. Physiology would not have been of the slightest avail if called in here, nor would anything have equaled the empirical act of Mr. Moore when he removed a Nepenthes from the hottest to the coldest house and watched the result. It often proves the case that some outsider, working in utter ignorance of the conditions provided by Nature for a particular plant, has discovered the best method of culture by accident, some would say, but at any rate, by purely empirical means. Propagation, one of the most important departments of horticulture, neither seeks nor requires assistance from the botanist, and it is questionable if the botanist could help toward the discovery of the most suitable method for the multiplication of any plants. So far as I know he has not done so yet.

Botany, however, explains a great deal of what the gardener does, and in this manner it may be said to help him. The man who understands somewhat the nature of what he is doing is superior to the man who works blindly by rule of thumb. The fact remains, however, that horticulture goes its own way, and by experimenting in all directions discovers the needs of most plants in a manner that often astonishes the botanist. It may be heresy to say so, but the scientific man who knows nothing of horticultural art, is oftener a hindrance than a help to the gardener; and it is not until he has tried to grow plants by the light of his science, and not according to the rules of horticulture, that he discovers with Professor Forster "that there are more things in the plant and in the soil than are dreamt of in the latest philosophy of our newest botany," and the gardener who aims only at fitting the plant and the conditions at his command, so as to make them agree, obtains better results than could be got by the most minute research in the botanical laboratory.

This subject leads one to the consideration of horticultural schools, which are occasionally recommended as affording that kind of training most desirable in a gardener. During the last ten years I have been brought into contact with some

* Mr. Burbidge, who found this plant in Borneo, thus writes of it in his charming book, "The Gardens of the Sun," p. 100: "On open spaces among rocks and sedges the giant *Nepenthes Rajah* began to appear, the plants being of all sizes and in the most luxuriant health and beauty. The soil in which they grew was a stiff yellow loam, surfaced with sandstone grit, and around the larger plants a good deal of rich humus and leaf débris had collected." Still higher up the same mountain Mr. Burbidge found *N. villosa*, and it is remarkable that whilst the latter thrives only in the hottest and moistest stove, *N. Rajah* must be treated as a cool plant. Who would think of attempting to grow Nepenthes in a "stiff yellow loam?"

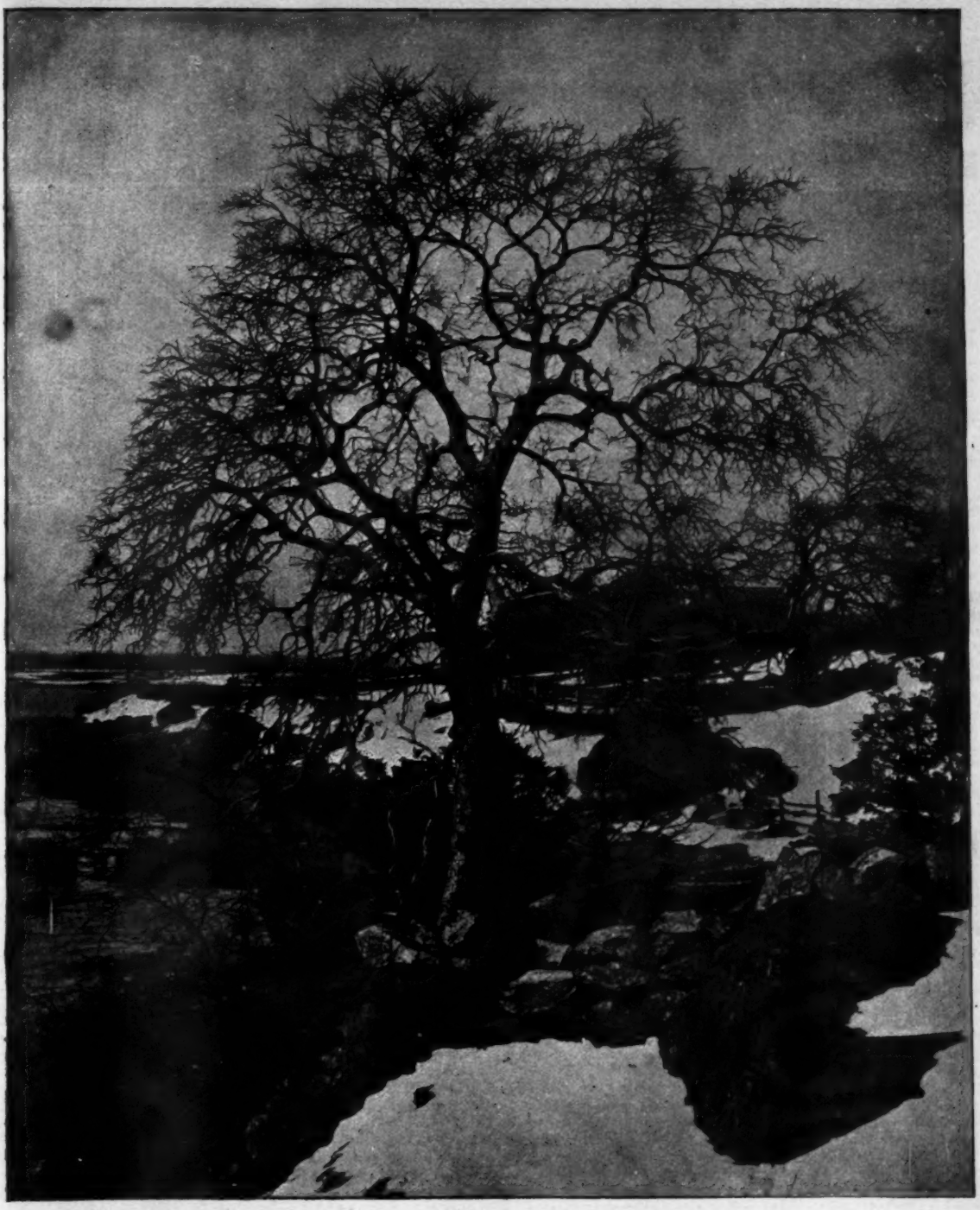

Fig. 13.—Celtis occidentalis: Coast of Massachusetts.—See page 39.

hundreds of young gardeners, who have been employed here at Kew, and with scarcely an exception I have found that those men who had been trained in the sciences, in professed horticultural schools, were much inferior as gardeners, *i. e.*, cultivators, to men who had devoted themselves to the study of the art of gardening, and practised it in good gardens. Gardening is instinctive, and a man must love plants for their beauty, not as botanical curiosities or anatomical studies, if he is ever to shine as a gardener. The best gardening school is a good garden, where what is done is done earnestly; and the best gardeners are men who study first the plant as a thing to be grown well, and make it their special business to be constantly on the look out for "wrinkles" which shall help them in their art. As a rule, when a man begins seriously to count stamens and cut sections, he has started on a road that will take him away from gardening, if he is not careful; it may lead him to something that is considered higher than gardening, which, however, is beside the point. *W. Watson.*

London.

[No doubt it is true that scientific study alone will not suffice for the equipment of a practical cultivator; but few persons will deny that it is possible to add with advantage to practical training in the art of gardening some knowledge of the sciences upon which it rests.—ED.]

Cultural Department.

Grafting.

SOME time ago the London correspondent of GARDEN AND FOREST spoke of the controversy about grafting carried on in *The Garden* and expressed the hope that some American comment would be made on the subject, especially because grafting must have been tested here on a gigantic scale. I had already procured some figures from Mr. C. A. Green, secretary of the American Nurserymen's Association, which I quote: "We have record of five thousand nurseries in the United States, and I estimate that there are five thousand not recorded. Ten thousand nurseries, many of them very small, I estimate, average ten thousand trees yearly, giving one hundred millions of trees propagated annually. For the past fifty years, perhaps twenty millions annually would be within limits, giving a total of a thousand millions in fifty years." These trees have been scattered all over the United States, an area three thousand miles in diameter. Sixty millions of people in America, and perhaps some thousands in Europe, eat annually of their fruit. They were all grafted trees, many of them double-grafted, and so satisfactory has been the process that American nurserymen will continue to graft and American fruit-growers persist in planting them, and yet these trees are what some able writers in the English press stigmatize as "rubbish;" one eminent writer going so far as to assert that "grafting is always a make-shift and often a fraud."

Now I do not care to show how impracticable are the notions of some of these writers who advise a "return to the old plan of hillock layering" instead of this "fraudulent" practice of grafting. I merely wish to state that universal experience has proved that this wholesale condemnation of grafting is baseless. The nurseryman who tries to unite a graft with an unsuitable stock will not succeed, simply because he does not know his business, but when an appropriate stock is chosen for a graft, and both are properly prepared, there is no evidence to show that the tree will not be as long lived and as healthy as a seedling on its own roots.

Mr. Temple, of Cambridge, who was in England while the controversy was at its highest, stated that the sole reason for the use of grafting has been its cheapness. Now if trees can be propagated equally well and more cheaply by grafting than in any other way, that would be an ample justification for the practice. But the fact is that grafting serves many other useful purposes. No doubt the writer of the above is aware that American vines are now largely grown and sold in Europe (see GARDEN AND FOREST, vol. 2, page, 555) as stock upon which the more delicate old-world varieties of grapes are grafted, and that in many regions vine-culture has been saved by this process because the phylloxera does not injure the strong roots of the American vines. It is well known, too, that many ornamental trees do better when grafted than they do on their own stock. *Magnolia glauca* is greatly improved by grafting it on *M. acuminata*, and no one would be so foolish as to layer *M. parviflora* or any other of the new sorts. Mr. Burbidge asserts that he would as soon think of grafting a cabbage as a coniferous tree, and yet he can find thousands of grafted conifers in England which have grown with great vigor and beauty for forty years. In this country seedling Norway Spruces are old and brown and dishevelled in thirty years, while the Oriental Spruce, grafted on this same Norway stock, is in full vigor and beauty.

Mr. Temple states that he has seen acres of grafted Chinese Magnolias with all their buds killed in a hard winter. I have never seen acres of living or dead Magnolias here, but I have seen enough to know that Magnolias properly grafted, planted and cared, for are as sure to grow for twenty years as are Apple trees or Pear trees.

The whole gist of the matter seems to lie in the question whether a perfect union can be formed between a graft and the stock. This is a question in physiological botany which I am not capable of answering scientifically; that is, I have never made, nor am I able to make, the proper microscopic and other investigation which is needed to demonstrate that the union is absolutely perfect; but as a matter of practice I think that no one who has had years of experience will hesitate to say that when trees are properly grafted they show no less vigor than seedling trees and are quite as likely to be long-lived. Of course if one selects for stock and cion plants which are not closely related, or pays no proper attention to the condition of both when the grafting is done, or performs it in a clumsy way, failure will follow. This only proves, however, the lack of skill and intelligence in the operator. If we grant that a union which is practically perfect can be made, then it seems to me plain that there may be many cases in which grafting would add to the vigor and longevity of a plant, and certainly we may be able to extend the range of certain varieties of fruit and ornamental trees if we can use the roots of one tree which are adapted to a certain kind of soil and graft upon it the top of another whose roots would not thrive in that soil. The grafting of European Grape-vines on American stock is a case in point. Our experience is that roots of *Rhododendron Ponticum* are never killed by heat or by cold here, and, therefore, they make an admirable stock, both for the varieties *R. Cawtawbiense* and the Ghent Azaleas in places where neither of these plants will thrive on their own roots. The best gardeners in England graft the Peach on Plum-stock where fruit is to be grown under glass.

But there is no need of multiplying instances to defend the practice of grafting as an indispensable one in many cases. I have said this much in the hope that other cultivators may give their thoughts and experience, so that some new ideas may be brought forth and suggestions made as to the directions in which the practice may be hopefully extended or in which it may be properly curtailed.

Flushing, L. I. *S. B. Parsons.*

The Rose-beetle.

A PUZZLING problem to the horticulturists of southern New Jersey is, "What may be done with the rose-bug?" and the question may become of serious interest generally. This insect, *Macrodactylus subspinosus*, threatens to occupy as prominent a place in our agriculture as does the potato-beetle. It is even more formidable. We know how to deal with the potato-bug, but ingenuity is thus far baffled in devising means of contending against the rose-bug. For some years my own experiences with it have cost a thousand dollars a year, and I am as helpless against this pest as when I began trying to defend my plants from its ravages.

In this region, colonies of rose-bugs have existed in various localities for several years. I first saw a few of them in the corner of my vineyard in 1886. The next year I found there many more of them occupying an extended space. In 1888 they reappeared in multitudes. In 1889 they came in myriads, from the soil of my vineyard, where my colony hibernated, and also migrating to me in swarms, generally from the westward. At the same time this rose-bug irruption seemed prevalent over a wide expanse of territory. Seemingly, in their primary colonies, where we have known these insects for many years, they have been steadily increasing and have at last swarmed forth to "fresh fields and pastures new." There is reason to fear that this swarming may continue. It is a rule of life that, when supplied with food, population tends to increase and occupy new territory. The Colorado beetle staid in its western home until our extending agriculture offered it inducements and facilities for emigration to the east. When it could find food it started on its travels. It is here at home with us, and, while we grow food for it, the potato-bug naturally will enlarge its family and be our thriving guest. For a time there was hope that like some other epidemics this bug-affliction might pass away; but this hope is yearly disappointed. If *Macrodactylus subspinosus* thrives upon our agriculture as does *Doryphora decemlineata* there is work in store for our entomologists. As a foe to viticulture, the rose-bug is more dangerous than all our rots and mildews. Those who have suffered from slight attacks of this insect pest have no conception of what it may be. When they invaded my premises last summer, 1889, they devoured all the fruit on some 4,000 vines in spite of every effort to prevent them. I was not shorthanded, and for several weeks I waged constant war upon them, employing every means of destruction which could be suggested. With me the visitation of the bugs lasted a month, and when they were gone my grapes were gone. The grapes I harvested were from vines which they failed to visit.

The experiments I was making to test preventives of Grape-rot were chiefly a failure, because where the rose-bugs came they left no grapes to rot. Thus, in an isolated block of 450 vines devoted to certain special treatments, and which at the first treatment were full of blossoms, I did not find a cluster left when I went to spray them again. I have a number of vines of specially valued sorts, which I made special efforts to protect. Every morning for three weeks I visited them, before sunrise, and often through the day, knocking off the bugs and killing them on the ground. I thus killed daily hundreds of bugs on every vine. Often when I jarred a vine the ground beneath it would look yellow from their number. It is needless to say that no grape blossoms escaped on these vines.

I have a Sweet Gum tree which is particularly affected by the rose-bugs. At the height of their invasion this tree was occupied by millions of the insects, and at quite a distance from it they could be heard like the humming of a mighty swarm of bees. Looking upward one might see the bugs in the air, drifting like snowflakes from all quarters toward this tree. The ground around it, over the space of a half acre, was yellow with them.

I write these details to give the inexperienced some idea of what an overwhelming visitation may be made by Macrodactylus when he sets forth to get a living. Of the fungus foes to the vine, we have (thanks to the French discovery of the uses of the copper sulphate solutions) henceforth but little to fear. I now am confident of ability to control grape-mildew and grape-rot, but before the rose-bug I am powerless. I have a large vineyard, but if they come next year as they did last summer I have serious doubt of harvesting any grapes.

I have found one mercurial drug which destroys the insect pretty promptly, but it is dangerous to the operator and to the plant. I would hesitate to risk its use, and will not recommend it. Besides, of what avail is it to kill the advancing hordes of this hungry host which pours on in ever-increasing multitude? I think that our protection must be found in some chemical which will be offensive to and thus repel the insect. But I have not found this yet, though I have tried many. In 1887 I fancied that the spraying with copper sulphate solutions was repellant to the bug, and so I reported it. That year they promptly forsook the vines sprayed with Bordeaux mixture. This year they did not, or perhaps the constantly arriving bugs kept up the depredation on the vine. If each took but a mouthful and passed on, it was enough to devour every blossom.

A sure and safe way to kill the insect is to jar them from the plant and kill them on the ground with a paddle. This may be done early in the morning, when the insects seem torpid. After nine o'clock they fly when disturbed, and thus escape damage. Last summer I found a way to overcome this difficulty, and shall resort to it next year with a slight hope of better success. Of good insect powder (pyrethrum or buhach) make a solution, one ounce of the powder to two gallons of water. First wet the powder to a paste before mixing with all the water, and spray the vines with this mixture. The bugs will be paralyzed, fall to the ground and lie helpless for a time. Have men to pass along both sides of the trellis to jar the vines and kill the bugs. The insect powder does not kill them; it only stupefies, and they will finally recover and fly away. But meanwhile they will be still for a while at any time of the day, and thus we may war upon them more destructively, and by constant attention, almost day and night during the rose-bug epidemic, a portion of the fruit, on a limited number of vines, may be saved. The invasion usually lasts about four weeks. As our territory becomes more densely cultivated the parasitic insects and fungi will spread as do infectious diseases through dense populations. In time our viticulture must be greatly modified. To manage large plantations of vines in this way will be impossible, and grape-growers will be limited to as many as they can fully protect.

Vineland, N. J. *A. W. Pearson.*

[Colonel Pearson's statement of the problem is accurate, and, from all evidence, the account of injury done is not at all overdrawn. The insect passes the larval state in the ground, feeding on roots of grasses, etc., and is not injurious in that stage. It then resembles a small white grub. In spring the beetles emerge and pair freely. They are especially fond of flowers, and not only those of the Grape, but almost all others attract them, and are injured. The habits of the larva render it next to impossible to reach the insects in that stage, and the imagos appear in such numbers that, even if all were poisoned one day by a single mouthful, that single mouthful would mean the crop of grapes. A modification of Colonel Pearson's remedy seems the best thing yet proposed. On a light frame of convenient size stretch a piece of muslin so that it shall sag in the middle. Early in the day send a man each side of the trellis with such a frame and jar the beetles from the vines. At intervals dump the collected beetles into a pail of water with a thick scum of kerosene floating on it. Not only from Grapes but from all other favored plants, should the beetles be collected. This is essentially a case where co-operation is necessary, and all interested should unite and systematically fight these pests, not for one season alone, but year after year, so as to keep them down to harmless limits.

In Germany thousands of bushels of cockchafers are annually collected, and thus only are the trees in many localities saved from complete defoliation. The Government there pays a small bounty, and collecting is compulsory. A common interest here should unite the farmers and lead them to do what there is no legislation to compel. Entomologists may yet find some weak point in the existence of this species; but for the present the suggestions above are all that can be made.—ED.]

Perennials from Seed.—I.

THERE seems to be some doubt among amateurs as to the feasibility of raising hardy plants from seed, and, judging from advice given in some horticultural papers, it would appear that this, the most natural method of increasing one's stock of perennials, was but indifferently understood. When it is taken into consideration that seed is the medium which Nature has provided, and by means of which nearly all plants naturally spread and perpetuate their species, it only remains to take into consideration the surroundings in which the plants are found, such as climate and position, to enable even the uninitiated to succeed in raising these plants from seed. To American cultivators the one great difficulty encountered at the outset is the means of obtaining good and fresh seed of plants of this description, as there does not appear to be any one yet who has taken up this branch of business and made a specialty of it; for, as a rule, none but the commoner kinds are catalogued, and these are easily and cheaply purchased, while the more rare and expensive kinds are no more difficult to raise from seed, and a good, thrifty plant raised in this way is far more likely to become established than a miffy or minute imported plant. Nothing is more certain, however, than that when the demand comes, the supply will be equal to it.

During the past two months we have sowed over 400 kinds of seed, many of them being seeds of plants which cannot be obtained in any other way. Of those sown about one-fourth have yet to germinate, and this is just about the percentage of perennials which do not come as easily from seed as annuals. With these even it is only a question of time and careful attention in the matter of watering in some cases, while with such as are indigenous to alpine regions, judicious freezing is needed to bring about germination with the advent of spring sunshine. Of those plants whose seeds are usually long in germination, a large number are included among the *Ranunculaceæ*, such as Trollius, most of the awned Anemones and Clematis. In the same list belong species of Iris, which have round seeds, Dictamnus, Alströmerias, most Liliaceous plants, and some of the *Fumariaceæ*, as Corydalis and Dicentra. This rule, covering certain families, is by no means a hard and fast one, as for instance, we sowed seed of the pretty Algerian *Ranunculus bullatus*, and it germinated in a week, while the seeds of *R. Lyallii*, probably the finest of the genus, which we have recently received from New Zealand, may require two years before they appear from the time of sowing. At least this time was required in the only instance of which one can find record where these plants were raised from seed. This is an exceptional case, of course. We name the above kinds as extreme cases, so that there need be no disappointment at delay. The best time to sow seeds of perennials, when it is intended to do so on a large scale, and where a good, light structure and fire heat are at disposal, is, without doubt, as soon as good, fresh seed can be purchased from the growers, or, in other words, any time during the winter or early spring months.

There is a two-fold advantage in sowing as early as possible, in that it not only enables one to devote the necessary attention to the young seedling plants at the proper time and when out-door work is at a standstill, but also that the plants may be strongly established in pots when the time arrives for transferring these to their permanent quarters in the open ground, where many of them will flower the first year, or within twelve months from the time of sowing. We are aware that it is usually thought best to sow seed of all kinds in spring, when increased light and sunshine may be relied on to accelerate growth, and this is so when one has not control over the conditions necessary to ensure germination and a subsequent continuation of growth, as in a well-heated house. Should a hot-bed or cold frame be the only facilities

at command, the success need not necessarily be less, but sowing must be deferred until the departure of frost. On sowing in the open ground we cannot speak favorably, owing to the trying influence of long continued drought and heavy thunder-storms. *O.*

Passaic, N. J.

Cattleya Dowiana and its Varieties.

THIS superb Cattleya is now becoming pretty common in collections, thanks to recent importations; and, as is usual in such cases, it already shows traces of a certain amount of variability in the color of the flowers. It is certainly one of the showiest and most distinct of summer-flowering Cattleyas, and will doubtless become still more universally cultivated in the future. The rich crimson-purple lip, exquisitely penciled with radiating golden lines, forms a brilliant contrast with the clear yellow sepals and petals, and imparts a charm to the flower which could scarcely be excelled under any circumstances. It is somewhat curious that so beautiful a species should have remained unknown in gardens so long after its discovery. It was originally detected by Warscewicz, about 1850, in Costa Rica, and both living plants and dried specimens were sent to Messrs. Low & Co., of Clapton. The plants never reached their destination, hence it was that for some years afterward doubts were entertained of the existence of so superb a Cattleya as that which the letters of the traveler described. About fifteen years afterward, however, it was rediscovered by Mr. Arce, a native naturalist, who was engaged in collecting natural history objects in Costa Rica for Mr. G. Ure Skinner. Plants were sent to England through Captain Dow (after whom the species was named), and one of them flowered in the establishment of Messrs. James Veitch & Sons, of Chelsea, in the autumn of 1865. It is said to be restricted to a small area on the slopes of the great central mountain range facing the Pacific Ocean, and to exist only in very limited numbers. This is the old typical form, and still rare in gardens; indeed it is said to be more difficult to cultivate than the varieties.

It is highly curious that a form of the same species should grow in New Granada, over 600 miles distant from the native home of the typical *C. Dowiana*. It is the variety aurea, and was discovered by Gustav Wallis in 1868, near Frontino, in the state of Antioquia. Rœzl places its habitat near the river Cauca, at a considerable distance above its confluence with the Magdalena. It chiefly differs from the typical form in having the markings on the lip more copious and irregularly distributed over the surface. It is the discovery of this variety which has chiefly helped the plant to become so common in gardens, as the old Costa Rican form is still comparatively rare. It is also said to be more easily cultivated, and certainly seems to be more variable. The variation chiefly resolves itself into a paler or deeper shade of yellow in the sepals and petals, and the relative preponderance of the crimson or golden-yellow markings on the lip. But slight as this may appear on paper, it amounts to a great deal when a number of plants are seen growing together. In some species it would mean the difference between a good and a bad form, though in so grand a species even the worst forms are very beautiful.

The variety chrysotoxa, originally called *Cattleya chrysotoxa*, and recently figured at *t.* 80 of the *Reichenbachia*, is best distinguished by having a large, dark crimson-purple, triangu lar blotch in front of the lip, which gradually passes into a narrow border of the same color behind, thus leaving a large and very characteristic golden-yellow space on each side of the throat. Other varieties do not appear to have received distinctive names, and perhaps it would be difficult to find constant marks of difference, for they pass so gradually the one into the other that the differences observed may be said to be chiefly that of mere individuals of the same species. The opposite extreme to the one just mentioned is when the crimson color preponderates and the yellow is confined to the radiating nerves. Forms possessing this peculiarity are exceptionally gorgeous, especially when the sepals and petals are of a deeper shade than usual.

The New Granadian form of *Cattleya Dowiana* is known to grow with *Cattleya labiata Warscewiczii* or *C. gigas*, as it is often called, and the result is that several well-marked natural hybrids have appeared in collections in which the characters of the two are unmistakably blended. *Cattleya Hardyana* was the first of these which appeared, and a splendid figure may be seen at *t.* 231 of the "Orchid Album." *C. Massaiana*, figured at *t.* 362 of the same work, is equally beautiful, though perhaps less distinct than could be wished, and better called a variety of *C. Hardyana*. In these the characters of *C. gigas* preponderate, especially in the color of the sepals and petals; but in other specimens, not yet figured, and probably resulting from the reverse cross, exactly the opposite takes place, for the sepals are but lightly marbled with pale rose, while the petals have the ground color of this shade, but the whole copiously veined with light yellow in just the same way as the lip. The effect of this is very curious, though the colors are not as brilliant as in the other forms. Several very beautiful artificial hybrids have also *Cattleya Dowiana* for one parent, and thus we see how important a place it fills in our collections.

London. *Calypso.*

Correspondence.

Horticultural Notes From California.

To the Editor of GARDEN AND FOREST:

At this time, January 7th, the San Francisco florists have no out-door Roses. After such a long-continued storm, the only dependence is on plants grown under glass. A few Daffodils and Lilacs are in the market—early flowers from sheltered gardens. The flowers of the Japanese Quince have begun to appear, masses of yellow Acacias are sold on the streets with flowers of *Magnolia grandiflora* from San Raphael, and violets were never more cheap and abundant.

The coming favorite here, among spring-flowering bulbs, is undoubtedly the Daffodil. None are better adapted to California soil and none are more popular. For ten years I have seen the interest in this flower increase, and thousands of bulbs are now being planted. The only Daffodil known here has been the common Yellow Trumpet, but last year collections of English varieties and of other species began to appear, and one occasionally sees a flower of *Narcissus Horsfieldi*, or of *N. præcox pallida*. Naturalized here, among the shrubbery and in hill-gardens, the Daffodil requires no more cultivation than our Eschscholtzias.

A vast amount of Rose-planting is going on in California, and the results will be charming in a few years, as good varieties are mainly used. Several nurserymen have estimated the yearly Rose-sales at 250,000, and of course a great many amateurs propagate plants by the hundred for their own gardens.

The Importation of Japanese trees has become a large business here. Four or five firms engage in it. Mrs. Berger has brought over Camellias twelve feet high and in full bloom, and some wonderful collections of Chrysanthemums, Peonies and Lilies. I understand that a large part of the Japanese plants sold in this city are sent to the Atlantic states and the South, or even to Europe, and that few Californians are willing to pay for the choicest things that are imported. This agrees with what some of our older nurserymen have often told me, that the taste for fine plants is at present suffering an eclipse here. The actual number of choice conifers and rare deciduous trees and shrubs that were sold in this state twenty years ago was larger than it is now. The number of beautiful private grounds has not appreciably increased in the region around the Bay of San Francisco, since 1870. Cottage-gardens are more abundant; streets and lanes are more often planted with trees, but that reign of ornamental horticulture, which half a century ago was predicted as certain to come to California, appears little nearer now than a score of years ago. At present hardly a nurseryman in the state keeps the leading Pacific Coast conifers.

"I cannot sell Deodar Cedars, Araucarias; Umbrella Pines, or even our beautiful native Lawson's Cypress," said a prominent nursery-man to me lately.

The trouble appears to be that the enormous growth of the orchard interests, and the capital invested in them, have kept nurserymen and planters alike busy with the practical side of horticulture. Perhaps, after a while, the ornamental department of the nurseries will have a sudden development.

The great rainfalls, floods and heavy snows in the Sierras, have set people thinking about the forests. More than one of the daily newspapers have called public attention to the warning involved. If the snows are to be held back in the mountains, they urge, the trees must be saved. "On the preservation of the forests the prosperity of the greatest interests of the state depends," says the *Daily Bulletin*. It remains to be seen whether this interest can be directed into forms of efficient action. *Charles H. Shinn.*

Niles, Cal.

The Citizen's Rights in City Trees.

To the Editor of GARDEN AND FOREST:

Sir.—In your issue of December 18th, Professor Bailey, of Brown University, asks sympathy with his "growl" at the use of sidewalk-trees as telegraph-poles in Providence, R. I. I do not know what sympathy he has received, but I should like

to take the liberty of suggesting that he should not be content with growling if he really cares for the trees.

I presume that the trees in question belong to the city—that is, to the citizens of Providence, subject to the control of the city authorities for the benefit of the citizens. Should the trees happen to be on private property, and free from municipal control, the matter would be simpler. The guilty party is, presumably, a corporation, and even if its officers are deaf to the appeals of reason, they cannot be so to the commands of law. The use of the city's shade trees as telegraph-poles is so manifestly contrary to the interests of the citizens that if Professor Bailey consults a lawyer he may, perhaps, find that he is not without legal remedies after all. To make use of them, however, would require some money, the ultimate co-operation of the authorities, and a sufficient public opinion to sustain the movement.

The latter requisite, if obtained, would bring the others with it, and hence is the first to be secured. If no citizens' association to prevent municipal abuses already exists, Professor Bailey and his sympathizers would have to start the movement themselves. Providence is reputed to be a city of intelligence and wealth (although the only Rhode Island member of the American Forestry Association does happen to reside in Newport), but it is impossible that all the men and women care only for the profits of this telegraph company, and nothing for the trees. Let the tree-lovers organize, secure the co-operation of the local press if possible, appeal to all intelligent men and women (especially the latter), develop public opinion, raise funds for agitation and litigation, and then go before the authorities. If the company has such a "pull" on them that they will not order the wires off the trees, perhaps they may be legally compelled so to order, or the matter may be made a test at the next local election. I believe Rhode Island has adopted the Australian ballot, which facilitates independent nominations, and if so the tree-reformers can run their own men very easily. If Professor Bailey and his friends are too busy to do all this personally, let them get the students in botany to organize for the work. If the students have no enthusiasm for the trees, the lectures they have listened to have been worse than useless. Then there are the students of constitutional history, of political economy and of law. One good object lesson in the ins and outs of local politics, and the acquisition of corporate privileges would be worth months of reading and lectures.

But all this to save a few trees? Well, what did Professor Bailey's growl mean, if not that his rights and privileges had been attacked as well as the trees? Though in this, as in countless other things, that great indictment of popular government holds good, "What is every one's business is no one's business," are not the rights of the citizen always worth defending? Unless Professor Bailey is as ready, to the full extent of his power, to save the trees as the company is to injure them, I fear his growl will be fruitless.

Philadelphia. *Charles C. Binney.*
Cor. Sec. American Forestry Association.

The Christmas Rose.

To the Editor of GARDEN AND FOREST:

Sir.—For more than thirty years I have had a Christmas Rose, *Helleborus niger*, in my flower-border, and it always gives me blossoms for Christmas day. This year, owing to the mild season, it blossomed earlier than usual, about the 1st of November, and it is still flowering on the fifteenth of January.

The merits of the plant are: (1) That it gives flowers when other plants are out of bloom; (2) the cut flowers keep fresh in water for nearly a week; (3) it needs no particular care or cultivation. My plant has been in the same place thirty or more years. If we have a very cold night or day I cover it with a box, but I give it no protection at other times.

I write this with the impression that the Christmas Rose is but sparingly cultivated about Boston, and with the hope that others in this region may be led to make trial of a plant which will give them great satisfaction.

Brookline, Mass. *T. E. Francis.*

The Mild Winter.

To the Editor of GARDEN AND FOREST:

Sir.—It may be worth while to give a list of plants in bloom in the open ground and in mid-January at Raleigh: Japan Quince, Spiræas of several sorts, Tea and China Roses, Hyacinths, Tulips, Narcissus in variety, Kæmpfer's Iris, Petunias, Violets and Pansies, *Bellis perennis*, perennial Candytuft, Verbenas, Scarlet Geraniums, showing buds on new growth made since November, Strawberries in bloom and fruit, Sweet Alyssum, Drummond's Phlox, China Pinks and Carnations, Wallflowers, *Jasminum nudiflorum*, and perhaps other things I have not noticed. Madeira Vines have grown three feet high, and *Lilium candidum* flower-stalks a foot high. A Maréchal Niel Rose clambering over my front porch has at least 500 buds on it, and a large Banksia Rose on a trellis near by is forming buds. Strange to say, none of our Peach-trees have bloomed, but in Anson County, on the South Carolina line, Peaches are as large as nutmegs, and winter Oats and Rye are in full head. Many Peas and early Potatoes have been planted, and change now to freezing weather would be disastrous indeed; yet we can hardly hope to escape altogether.

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Periodical Literature.

THE following account of the Spath nursery at Rixdorf, near Berlin, is condensed from a recent issue of the *Gartenflora*. This nursery, which is one of the largest and best equipped in Europe, is remarkable for the new plants it has introduced, especially those from Persia and central Asia. It covers about 600 acres, and is divided into nine departments devoted to different classes of plants, each department being under the control of a head-gardener who shares in the profits of his department. Between 300 and 350 workmen are employed, many of whom have been in the nursery since its establishment, a quarter of a century ago. Their devotion and skill are shown in the fact that, in spite of its great extent, there is not a nursery in the world so absolutely free from weeds. The same care and intelligence are shown in the offices, where an exact and separate record is kept of each department, embracing not only the moneys expended and received, but the plantations made, the development of the plants, and every other detail which can serve to throw light upon the business. It is said that 6,000 species and varieties of trees and shrubs are cultivated, exclusive of about 1,000 kinds of Roses and 600 varieties of fruits; but this estimate is probably an exaggerated one. It is interesting to know that nine of the ten plants sent out from the nursery for the first time this year had been obtained from the Arnold Arboretum. A large number of new varieties have originated in the Spath nursery since its establishment, and among them are several novel forms of American trees, such as *Tilia Americana Moltkei*, and a silver leaved Occidental Plane. Spath's golden-leaved Dogwood is now well known as one of the best plants of its class in cultivation; and several of the best forms of the common garden Lilac originated at Rixdorf.

The following figures give some idea of the extent of the business: Between 500,000 and 600,000 plants are grafted in the course of the year. About 4,000,000 seedlings are grown and 15,000,000 cuttings are struck, besides 75,000 cuttings of conifers; 50,000 conifers are grafted, too, annually. Nearly 2,500,000 ornamental plants are available for the annual sales, beside a quarter of a million standard fruit trees.

All the roads that lead out from the city toward the nursery are planted with interesting avenue-trees, often of uncommon varieties, as, for example, *Populus Bolleanea*, *Pterocarya Caucasica*, and Paul's new Scarlet Double Thorn.

What may be called the Dendrological Museum or Arboretum proper is, perhaps, the most attractive part of the nursery to the non-commercial visitor. It is, of course, too small to allow the plants room for free development, but the arrangement in groups, by families, allows ready and satisfactory comparison of the different species and varieties in their young state and greatly facilitates the choice of plants grown in the nursery. The specimens in this special collection are plainly and generally accurately labeled with porcelain labels on which the names are printed in clear, bold-faced letters. There is a collection of standard Apples, and of Pears worked both on Pear and Quince-stock, and one of the long alleys through the nursery is bordered with selected specimens of ornamental trees, containing many with colored foliage.

The soil of the nursery is well suited to the cultivation of Hyacinths, Tulips and Lilies, as the whole area east of Berlin is composed of sand, with a subsoil similar to the famous bulb-growing districts of Holland. A large area is devoted to the cultivation of Lilies-of-the-Valley, principally for the American market. Lilies of many sorts grow in the nursery more vigorously and continuously than in almost any other part of Europe.

Herr Spath comes of a family of gardeners, his ancestors having been well known in the Berlin trade during the last two

centuries. As long ago as 1758 they established themselves on Copinger Strasse, and here there are still the town offices and the city residence of the present proprietor. It is not surprising that, as it is now developed and organized, the Spath nursery should attract many visitors from foreign lands as well as from all parts of Germany, which has no more instructive dendrological collection. It may interest American travelers to know that visitors are always welcomed by Herr Spath, and that the nursery may be reached from Berlin either by carriage or in a steamer to Neuer Krug or Borussia, or by the tramway of the Ring-bahn to Rixdorf, whence an easy half-hour's walk leads to the establishment.

Notes.

Newtown Peppins were sold in London on Holiday week for $19.60 a barrel.

The well-known Frangipanni essence is made from different species of Plumeria (a genus belonging to the Dog-bane family), which grow in the West Indies and certain parts of South America, and especially from *P. rubra*, a native of Jamaica.

The ninth annual meeting of the American Horticultural Society will be held in Austin, Texas, beginning on February 17th, and continuing for five days. An admirable programme has been arranged, and the meeting promises to be one of special interest.

In the greenhouses of Messrs. C. Strauss & Company at Washington, five acres of glass cover 80,000 Rose-bushes, of which 20,000 are of the Wootton variety. All are grown exclusively for cut flowers, and during the season from 10,000 to 25,000 buds are cut each day.

It appears from a note in a recent issue of the *Revue Horticole* that in the three months of July, August and September of last year no less than 1,192 cases, containing 700,000 bulbs were exported from Yokohama to the United States and Europe. A large proportion of these bulbs were, no doubt, *Lilium auratum*, which the Japanese grow as a field crop.

Some days before the close of the year the amount of rainfall for 1889 was announced to have been 58.68 inches, a quantity in excess by 3.34 inches of that recorded for any year since 1871, when the Signal Service Bureau first kept the record. The largest monthly amount fell in November, 9.82 inches; but it is more unusual to find July next on the list, with 9.63 inches.

The way in which foreign plants become "weeds," under new and favorable conditions, is illustrated by the recent case of *Melilotus alba* in our western states. Introduced a few years ago as a garden-plant, it has spread so rapidly in the rich bottom lands along the Missouri River that it is fast driving out the Sunflower and other native weeds. It is commonly called the "Bokhara Clover."

At a large dinner recently given in Washington, a space in the centre of the table nearly forty feet long and eight feet wide was sunk so that the 600 potted Ferns with which it was filled rose but a short distance above the table-cloth. Innumerable little electric lamps were scattered under the Fern fronds; no other lights were used in the room, and the effect is described as particularly charming.

Although the first Chrysanthemum exhibition held in Europe was held in Vienna in 1831, so little attention had recently been bestowed upon the plant in that city that the show organized last autumn was described as a "novelty." About a thousand plants were shown in 1831, belonging to fifty-five different kinds; this year the same number of plants represented 400 varieties. The massing of the plants in a large glass rotunda was described as very effective, but few individuals of great excellence were noted.

A correspondent of the New York *Sun* writes from South Carolina that a new value has been discovered in *Hibiscus esculentus*, the plant which furnishes the vegetable called okra or gumbo. Its stem furnishes a fibre which, like those of Ramie and Jute, can be woven into textile fabrics. Moreover, while in the other cases the fibrous and the woody elements are mixed together in the stem and have to be separated by hand, in Hibiscus the fibres form a central core surrounded by the wood. They may, therefore, be separated by machinery and, being long and extremely strong, will furnish an excellent fabric at very small cost.

So many reminders of the mild winter have been received at this office that we have no space to notice all of them. Very interesting was a photograph of a group of Christmas Roses which came from Cazenovia, New York, to testify how beautiful these flowers can be in mid-winter. We have received branches of many shrubs with fully-expanded flowers, and in a collection of this sort from the Meehan Nurseries at Germantown, together with many which we have heretofore noticed, were sprays of the Cornelian Cherry with the yellow stamens showing through the opening buds, and the Tartarian Honeysuckle with buds just opening.

The November number of *Macmillan's Magazine* contained an article by Mrs. Lecky on the "Gardens of Pompeii," which may be of interest to our readers as drawing at greater length upon the authorities quoted in the description of Roman gardens that was published not long ago in our "History of the Art of Gardening." The influence of the East on ancient European gardening is especially emphasized, and it is asserted on good authority that most of the gardeners of the Romans were Orientals. "At the very time when Roman power and luxury were in the ascendant, Italy was overrun with Semitic slaves. . . . Their gentleness and patience, their peaceful, laborious tastes, while rendering them unfit to be soldiers and gladiators, eminently qualified them for domestic service, and especially for the care required in tending plants."

The grass known as "Lalang" (*Imperata cylindrica*) gives the foresters of the Malay Peninsula more trouble than our own prairie grasses give the tree planters of the west. This Lalang is injurious by reason of its inflammability and because it prevents any cultivation of the land covered by it, except at great expense. Wherever land is allowed to run to waste it is soon covered with this grass except where the soil is wet, or sandy, or shaded by trees. The annual report of the Conservator of Forests at Singapore refers at great length to this plant, stating that it can be exterminated by chemicals, but these are expensive and have an injurious effect upon the trees planted in forest upon the land afterward. When trees are large enough to throw a shade the Lalang quickly disappears, and it cannot penetrate into forest glades if but a few trees bar its progress. The gradual planting of bushes and shade trees is recommended as the surest remedy for this grass pest.

The death of Peter Henderson removes a conspicuous figure from American horticulture. At the great establishment on Jersey City Heights, which he founded, the plants raised and sold every year exceeded in number those produced at any nursery in the world. His business as a seedsman was among the most extensive in the country. He was the author of many popular books, one of them, "Gardening for Profit," having attained a circulation of 150,000 copies. Every year, 200,000 of his illustrated catalogues were sent throughout the length and breadth of the country. He was a frequent contributor to many journals devoted to agriculture and horticulture, and a prominent place was always accorded to him at the meetings of the Association of American Florists, and of kindred societies, as well as in the business councils of his associates in the trade. Altogether he was more widely and familiarly known than any other man in connection with the horticulture of the country. And few men have exerted so marked an influence in his chosen field of activity. To him more than to any other one are we indebted for many improved processes in the production and distribution of plants. He not only aided in this direction by his writings but he exemplified his counsel in action, and a visit to his establishment was an object-lesson to all who wished to learn how horticultural practice could be made more cheap, simple and effective. Every square of glass and every foot of ground was always occupied to the full limit of its productive capacity, and every man was accomplishing all that was possible by trained skill and thorough organization. Mr. Henderson's alertness, enterprise and success as a business man was known to all the world, but only to those who were admitted to a closer intimacy was the genuine worth of his character fully revealed. His integrity was beyond any shadow of suspicion, his public spirit was universally recognized, his robust manliness and force were admired by all who came in contact with him, but the considerate kindliness of his disposition will bring more tender memories to many a man who has received from him prompt and generous assistance at precisely the time when sympathy and help were needed.